



LeafSpectrum

QUANTIFYING COLOURS OF PLANT LEAVES

GROUP 03 - P16

E/19/094 - Eashwara M.
E/19/129 - Gunawardana K.H.
E/19/372 - Silva A.K.M.
E/19/408 - Ubayasiri S.J.

Problem Domain

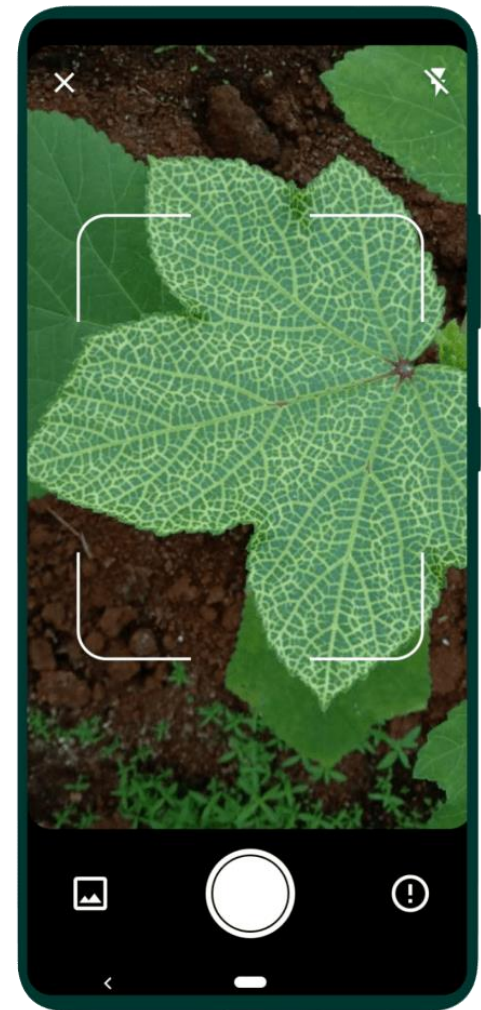
- Traditional leaf color assessment methods are subjective and time-consuming.
- Researchers face challenges in accurately and efficiently assessing plant information(nutrients & lighting conditions)
- Aims to develop a field technique



Proposed Solution

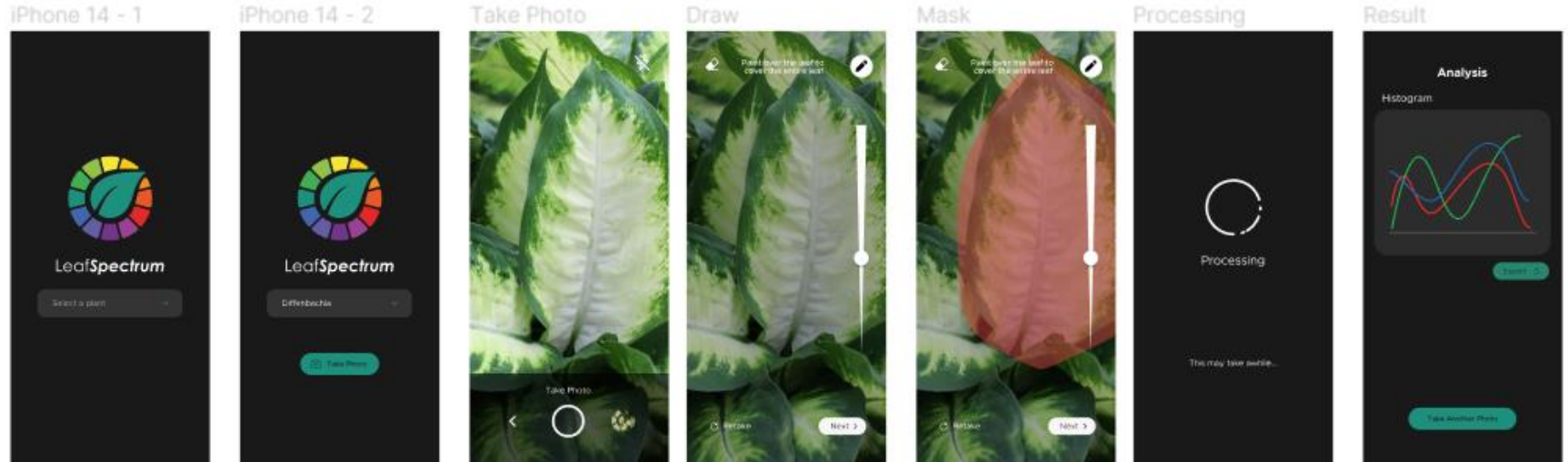
Mobile App to objectify the color quantification using Image processing and agricultural knowledge

- Provides accurate histogram data of isolated leaf
- Eliminates the human bias of the measurements
- Consistent and accurate



Wireframes and UI

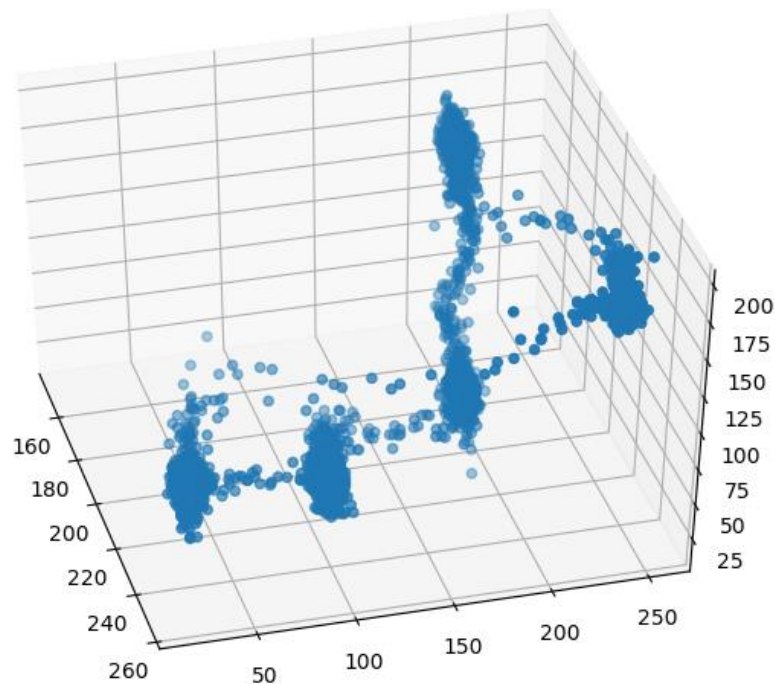
Figma Wireframe and Prototype



Extensions

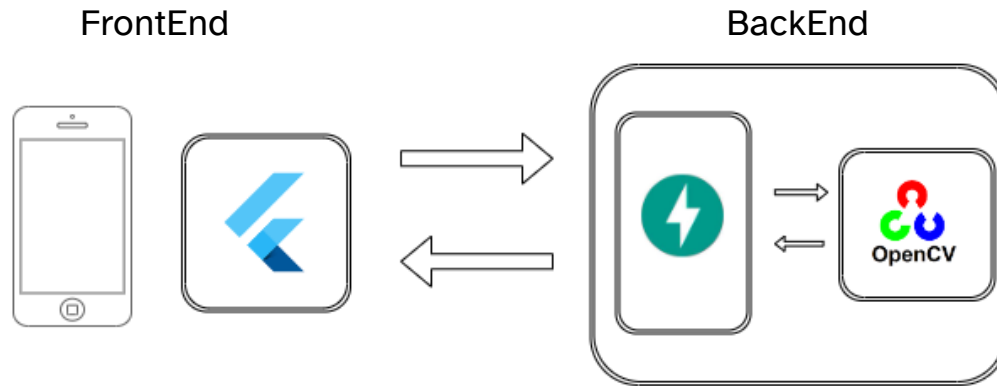
Depending on the requirements, the solution can be extended to accommodate the following features,

- Comparing Dominant Color Ratios using k-means clustering
- Color Calibration and Normalization
- Direct comparisons with 'ideal' leaves with a given leaf to show the deviation



Leaf**Spectrum**

Tech Stack



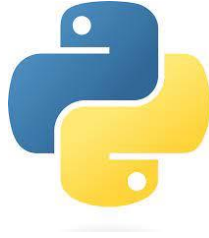
Frontend

Flutter - Dart

- An open-source UI software development toolkit
- Created by Google.
- Natively compiled applications for mobile,
- Both Android and IOS

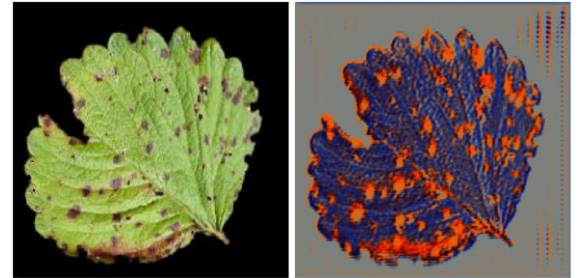


Backend



Open CV

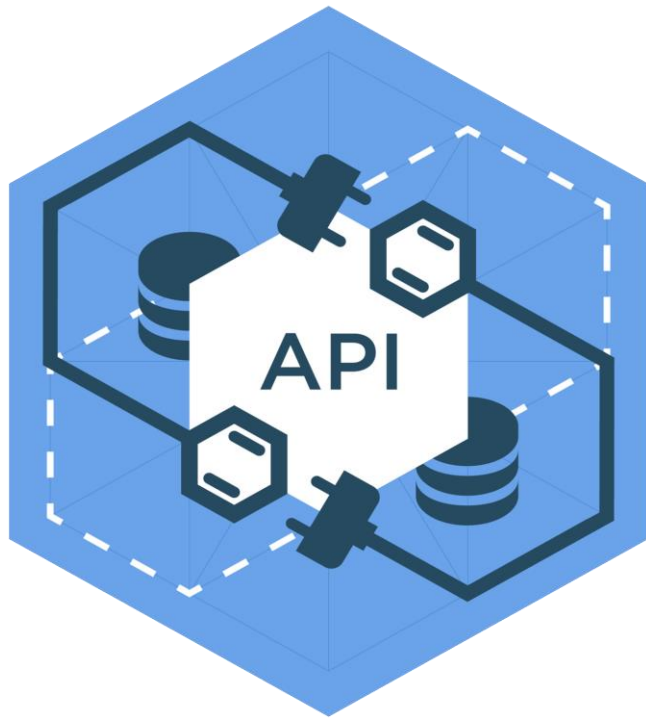
- Widely used library for image processing, object detection, and more.
- reading, processing, and manipulating images
- Provides pre-built algorithms



LeafSpectrum

FastAPI

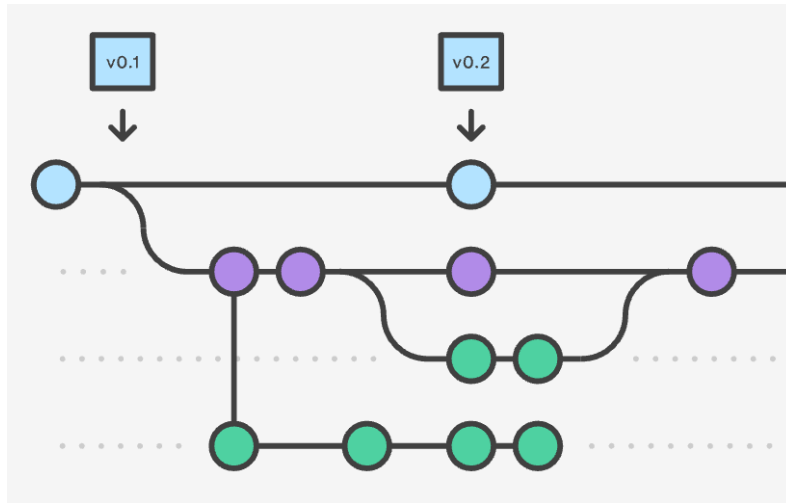
- Modern, fast (high-performance), web framework for building APIs
- Asynchronous programming and type hinting deliver
- Automatically generates interactive API documentation using OpenAPI and JSON Schema.



LeafSpectrum

Version Control & Project Management

<https://github.com/cepdnack/e19-co227-Leaf-Colour-Quantifier>



TIMELINE

